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Jun-Hong Lee

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HARNESS, DICKEY, & PIERCE, P.L.C
7700 Bonhomme, Suite 400
ST. LOUIS, MO 63105

EXAMINER

DEAN, RAYMOND S

ART UNIT

PAPER NUMBER

2618

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/569,516	Applicant(s) LEE ET AL.	
	Examiner RAYMOND S. DEAN	Art Unit 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1206</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 33, 40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 33 and 40 recites the limitation “**The** portable terminal” in lines 1 and 1 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 – 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US 6,822,871)

Regarding Claim 1, Lee teaches a sliding opening and closing device, comprising: a main plate; a slide plate, which is linked to said main plate to be slidable

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in one direction (Figure 1, Cols. 3 lines 16 – 21, lines 53 – 54, 4 lines 1 – 36, the spring module comprises a main plate and slide plate); an elastic part which is supported by said main plate and generates an elasticity power in one direction (Col. 4 lines 17 – 36); and a power transformation member which receives the elasticity power of said elastic member, so that on a particular position in the moving path of said slide plate, it can apply the elasticity power to said slide plate in the direction to be closed when said slide plate is in the closing position, and apply the elasticity power to said slide plate in the direction to be opened when said slide plate is in the opening position (Col. 4 lines 17 – 64, elasticity power is applied in a direction to be closed and in a direction to be opened thus enabling the sub body to slide on the main body to expose and cover the keypad, the torsion spring is the power transformation member).

Regarding Claim 33, Lee teaches a portable terminal having a sliding opening and closing device, comprising: a main body; a sub body which is connected to be slidable to said main body (Figure 1, Cols. 3 lines 16 – 21); a stoppering part for fixing said sub body to either position between said sub body being inputted into said main body and being outputted from said main body (Col. 4 lines 17 – 64, the sub body can be in an opened or closed position); and an elasticity part which supplies an elasticity power in a direction where said sub body is outputted from said main body or inputted into said main body (Col. 4 lines 17 – 64).

Regarding Claim 2, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein at least one set of guide slits are formed on said slide

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plate along the moving direction, and guide ribs, which are linked to be slidable to each of said guide slits, are formed on said main plate (Col. 4 lines 1 – 36).

Regarding Claim 3, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein one end of said elastic part is supported by said main plate, the other end of said elastic part is supported by said power transformation member, and said elastic part is a torsion spring generating a widening elastic force (Col. 4 lines 1 – 36).

Regarding Claim 4, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein one end of said power transformation member is linked to said elastic part and is guided on said main plate so that it can move only in the orthogonal direction toward the moving direction of said slide plate (Col. 4 lines 1 – 36), and the other end of said power transformation member comprises a pivoting arm which is linked to said slide plate so as to be able to be pivoted (Col. 4 lines 1 – 36).

Regarding Claim 5, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein said power transformation member comprises moving blocks which are fixed to receive the elasticity power of said elastic member (Col. 4 lines 1 – 36), and said slide plate forms a cam groove comprising a first slope having an angle applying power to said slide plate in the direction to be opened by receiving the elasticity power of said moving blocks and a second slope which is linked to said first slope and has an angle applying power to said slide plate in the direction to be closed (Col. 4 lines 1 – 64).

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Regarding Claim 6, Lee teaches all of the claimed limitations recited in Claim 5.

Lee further teaches wherein said moving blocks comprise: a cam pivot, which is linked to said elastic part (Figure 1, Col. 4 lines 1 – 64), has a projection, which is linked to be slidable to said cam groove (Figure 1, Col. 4 lines 1 – 64); a bushing which is linked to be slidable to a long hole which is formed in the direction where the elasticity power of said elastic part is applied to said main plate (Figure 1, Col. 4 lines 1 – 64); and a screw, which penetrates, said bushing and connects to said cam pivot (Figure 1, in order for all of the component in Figure 1 to be connected there will need to be screws and pins).

Regarding Claim 7, Lee teaches all of the claimed limitations recited in Claim 1.

Lee further teaches wherein a guide member is additionally comprised of, which guides the connection part of said elastic part and said power transformation member to move along the direction where the elasticity power of said elastic part is applied to (Figure 1, Col. 4 lines 1 – 64), and generates damping force to said power transformation member by allowing said slide plate not to move in the direction to be closed in the state that said slide plate is closed into said main plate and allowing said slide plate not to move in the direction to be opened in the state that said slide plate is opened from said main plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 8, Lee teaches all of the claimed limitations recited in Claim 7.

Lee further teaches wherein said guide member comprises a guide pin connecting said elastic part and said power transformation member (Figure 1, Col. 4 lines 1 – 64), and a long hole is formed on said slide plate for guiding said guide pin to move in an

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orthogonal direction toward the moving direction of said slide plate (Figure 1, Col. 4 lines 1 – 64, in order for all of the component in Figure 1 to be connected there will need to be screws and pins).

Regarding Claim 9, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein said power transformation member comprises a link wherein a first end, to which said elastic part is fixed, is connected to said slide plate to enable pivot rotation there around (Figure 1, Col. 4 lines 1 – 64), and a second end is connected so that said elastic part can move straightly as much as the predetermined distance and pivoting around the position where said elastic part is connected to said main plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 10, Lee teaches all of the claimed limitations recited in Claim 9. Lee further teaches wherein said power transformation member comprises a link wherein a first pivot hole, which is connected to a first rotation pivot projecting from said slide plate, is formed on a first end (Figure 1, Col. 4 lines 1 – 64), and a long hole, which provides space to a second rotation pivot projecting from said main plate to move, is formed on a second end (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 11, Lee teaches all of the claimed limitations recited in Claim 10. Lee further teaches wherein said opening and closing device limits the moving distance of said slide plate by making the end of said long hole to be hooked to said second rotation pivot in the position where said plate is opened and closed toward said main plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 12, Lee teaches all of the claimed limitations recited in Claim 11. Lee further teaches wherein a second boss is formed on said slide plate and a locking portion is formed on said link, which limits the rotation of said link by being hooked by said second boss before said slide plate moves to the position where said main plate is completely closed (Figure 1, Col. 4 lines 1 – 64), thereby making the moving distance of the direction where said slide plate is closed to be shorter than the moving direction where said slide plate is opened (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 13, Lee teaches all of the claimed limitations recited in Claim 10. Lee further teaches a cellular phone comprising said elastic part wherein one end is fixed between said first axis hole and said long hole, the other end is linked to said second rotation pivot to be rotated, and has a torsion spring generating an elasticity power in the widening direction (Figure 1, Cols. 3 lines 16 – 21, 4 lines 1 – 64).

Regarding Claim 14, Lee teaches all of the claimed limitations recited in Claim 9. Lee further teaches wherein said power transformation member comprises a first block wherein a second pivot hole is formed, which is connected to be rotated around a third rotation pivot projecting from said slide plate (Figure 1, Col. 4 lines 1 – 64); at least one sealed part fixed to said first block; and a second block wherein a penetrating hole, to which said sealed part is connected to be slidable, is formed (Figure 1, Col. 4 lines 1 – 64), and a third pivot hole, which is connected to said second boss formed on said slide plate to be rotatable, is formed (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 15, Lee teaches all of the claimed limitations recited in Claim 14. Lee further teaches limiting the moving distance of said slide plate by fixing a

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bridging piece at the sealed part penetrating said penetrating hole and making said bridging piece to be hooked by said second block at the position where said slide plate is closed and opened (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 16, Lee teaches all of the claimed limitations recited in Claim 14. Lee further teaches forming said first block as a non-circle and a bridging projection for limiting the rotation of said first block on said slide plate before said slide plate moves to the position where said slide plate is completely closed toward said main plate (Figure 1, Col. 4 lines 1 – 64), thereby making the moving distance in the direction where said slide plate is closed to be shorter than the moving distance in the direction where said slide plate is opened (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 17, Lee teaches all of the claimed limitations recited in Claim 14. Lee further teaches said elastic part is connected to said sealed part and comprises a compression spring generating an elasticity power in the direction where said first block and said second block move away from each other (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 18, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches a first block which is linked to be rotatable to a first spot of said main plate (Figure 1, Col. 4 lines 1 – 64); a second block which is linked to be rotatable to a second spot of said slide plate which has a different moving path from said first spot (Figure 1, Col. 4 lines 1 – 64); and a bar member which connects the first block with the second block elastically, wherein said elastic part is coupled to said bar

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member and generates an elasticity power in a direction of extending said first block and said second block (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 19, Lee teaches all of the claimed limitations recited in Claim 18. Lee further teaches based on the point of inflection in the moving course of the slide plate, at a closed position of said slide plate, said second block is positioned in a direction of closing into said first block, so that the elasticity power of said elastic part can affect in a direction of closing said slide plate (Figure 1, Col. 4 lines 1 – 64); while at an open position of said slide plate, said second block is positioned in a direction of opening from said first block, so that the elasticity power of said elastic part can affect in a direction of closing said slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 20, Lee teaches all of the claimed limitations recited in Claim 18. Lee further teaches said second block is installed at the place where the moving distance of said slide plate when being opened can be shorter than the moving distance of said slide plate when being closed (Figure 1, Col. 4 lines 1 – 64).

Regarding Claims 21, 31, Lee teaches all of the claimed limitations recited in Claims 18, 28. Lee further teaches a female shaft which is fixed to one side of said first block or said second block, and the length of which is shorter than the beeline between said first block and said second block (Figure 1, Col. 4 lines 1 – 64); and a male shaft which is fixed to the other side of said first block or said second block, and the length of which is shorter than the beeline between said first block and said second block is slidable in said female shaft during the opening and the closing of said slide plate (Figure 1, Col. 4 lines 1 – 64).

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Regarding Claims 22, 32, Lee teaches all of the claimed limitations recited in Claims 18, 28. Lee further teaches said elastic part is composed of a compression spring (Col. 4 lines 17 – 36, torsion spring is a compression spring).

Regarding Claim 23, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches wherein said elastic part generates a tension (Figure 1, Col. 4 lines 1 – 64), and said power transformation member is composed of at least two link rows, which connect a first spot of said main plate to a second spot of said slide plate, each of which is composed of at least two links having one or more refraction points, and which receive the tension of said elastic part and generate an elasticity power in a direction of extending said first and said second spots (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 24, Lee teaches all of the claimed limitations recited in Claim 23. Lee further teaches wherein said elastic part is composed of a tension spring (Figure 1, Col. 4 lines 1 – 64, the torsion spring is a kind tension spring).

Regarding Claim 25, Lee teaches all of the claimed limitations recited in Claim 23. Lee further teaches wherein said power transformation member supplies an elasticity power in a direction of closing said slide plate at a closed position of said slide plate based on the inflection point, while it supplies the elasticity power in a direction of opening said slide plate at an open position of said slide plate based on the inflection point (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 26, Lee teaches all of the claimed limitations recited in Claim 23. Lee further teaches wherein said power transformation member controls the moving distance in the direction of opening said slide plate to be shorter than the

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moving distance in the direction of closing said slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 27, Lee teaches all of the claimed limitations recited in Claim 1. Lee further teaches a compensation elastic means which generates an elasticity power in the same direction as said elastic part as to the direction of moving said slide plate, while generates an elasticity power in a symmetrical direction to the elasticity power of said elastic part as to the perpendicular direction of moving said slide plate, so that said slide plate can receive a uniform force as to the perpendicular direction (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 28, Lee teaches all of the claimed limitations recited in Claim 27. Lee further teaches said compensation elastic means comprises a first block which is connected to be rotatable to the first spot of said main plate (Figure 1, Col. 4 lines 1 – 64); a second block which is connected to be rotatable to the second spot of said slide plate (Figure 1, Col. 4 lines 1 – 64); a guide shaft which connects said first block to be elastic to said second block (Figure 1, Col. 4 lines 1 – 64); and an elastic part which is coupled to said guide shaft, and generates an elasticity power in a direction of extending said first and said second blocks (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 29, Lee teaches all of the claimed limitations recited in Claim 28. Lee further teaches based on the point of inflection in the moving course of said slide plate, at a closed position of said slide plate (Figure 1, Col. 4 lines 1 – 64), said second block is positioned in a direction of closing into said first block, so that the elasticity power of said elastic part can affect in a direction of closing said slide plate

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(Figure 1, Col. 4 lines 1 – 64); while at an open position of said slide plate, said second block is positioned in a direction of opening from said first block, so that the elasticity power of said elastic part can affect in a direction of closing said slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 30, Lee teaches all of the claimed limitations recited in Claim 28. Lee further teaches said second block is installed at the place where the moving distance of said slide plate when being opened can be shorter than the moving distance of said slide plate when being closed (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 34, Lee teaches all of the claimed limitations recited in Claim 33. Lee further teaches wherein a keypad is placed on said main body, and a liquid crystal screen is placed on said sub body (Col. 3 lines 22 – 34).

Regarding Claim 35, Lee teaches all of the claimed limitations recited in Claim 33. Lee further teaches a receipts space is formed from the side direction to the inside of said main body, to which said sub body comes in and out said receipts space (Figures 7, 8).

Regarding Claim 36, Lee teaches all of the claimed limitations recited in Claim 33. Lee further teaches said stoppering part comprises a sliding bar in which a hook hanging in a fitting boss installed in said sub body and a first elongated hole in a sliding direction are formed, and one end of which comes in and out from the inside of said main body to the outside thereof (Figure 1, Col. 4 lines 1 – 64); a first pin which is installed in said main body and coupled to said first elongated hole (Figure 1, Col. 4 lines 1 – 64, in order for all of the component in Figure 1 to be connected there will

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need to be screws and pins); and a compression spring flipping said sliding bar in a direction where said hook is hung in said fitting boss (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 37, Lee teaches all of the claimed limitations recited in Claim 33. Lee further teaches a first cross bar, one end of which is supported by said main body, and the other end of which is supported by said sub body (Col. 3 lines 16 – 21); a second cross bar which is positioned to be crossed with said first cross bar, one end of which is supported by said main body, and the other end of which is supported by said sub body (Col. 3 lines 16 – 21); a second pin which is coupled to the centers of said first and said second cross bars, and which makes said first and said second cross bars to be rotated relatively (Figure 1, Col. 4 lines 1 – 64, in order for all of the component in Figure 1 to be connected there will need to be screws and pins); and a torsion spring which is coupled to said second pin, and which supplies an elasticity power in a direction where said first and said second cross bars push said sub body (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 38, Lee teaches all of the claimed limitations recited in Claim 37. Lee further teaches at least two elastic parts in serial (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 39, Lee teaches all of the claimed limitations recited in Claim 37. Lee further teaches said elastic parts additionally comprise a first bracket, which is coupled to one ends of said first and said second cross bars, and which is fixed to said main body (Figure 1, Col. 4 lines 1 – 64); a second bracket, which is coupled to the other ends of said first and said second cross bars, and which is fixed to said sub body

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(Figure 1, Col. 4 lines 1 – 64); and a pair of guide rails, which are respectively fixed to both sides in said main body and which form a guide groove to which both ends of said first and said second brackets are coupled to be slidable (Figure 1, Col. 4 lines 1 – 64).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 40 – 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 6,822,871) in view of Nagamine (US 2003/0203747)

Regarding Claim 40, Lee teaches a portable terminal having a sliding opening and closing device, characterized by comprising: a main body; a main plate which is coupled to said main body (Figure 1, Cols. 3 lines 16 – 21, lines 53 – 54, 4 lines 1 – 36, the spring module comprises a main plate and slide plate); a slide plate which is coupled to be slidable to said main plate (Figure 1, Cols. 3 lines 16 – 21, lines 53 – 54, 4 lines 1 – 36, the spring module comprises a main plate and slide plate); a sub body which is fixed to said slide plate (Col. 4 lines 17 – 64).

Lee does not teach a rotating plate which is coupled to be rotatable to said slide plate; and a display device which is fixed to said rotating plate and rotates on said sub body.

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Nagamine, which also teaches a mobile terminal, teaches a rotating plate which is coupled to be rotatable and a display device which is fixed to said rotating plate and rotates on said sub body (Section 0021 lines 4 – 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile terminal of Lee with the rotation feature of Nagamine for the purpose of providing a mobile user with the flexibility to view images in landscape form as taught by Nagamine.

Regarding Claim 41, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 40. Lee further teaches a slide shaft is fixed to said slide plate, and a shaft holder is installed in said main plate, which is coupled to be slidable to said slide shaft (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 42, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 40. Lee further teaches a first elastic part which supplies an elasticity power in a direction of closing said slide plate when said slide plate is near to the closed position of said slide plate based on a certain spot on the moving course of said slide plate (Figure 1, Col. 4 lines 1 – 64), while it supplies an elasticity power in a direction of opening said slide plate when said slide plate is near to the open position of said slide plate based on a certain spot on the moving course of said slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 43, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 42. Lee further teaches the point of inflection in a direction

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of supplying force of said first elastic part is positioned within 1/2 of the total movement distance of said main plate from the closed spot thereof (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 44, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 42. Lee further teaches said first elastic part is composed of a torsion spring, one end of which is supported by said main plate and the other end of which is supported by said slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claims 45, 47, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 42, 40. Lee further teaches said first elastic part is composed of a torsion spring, one end of which is supported by said main plate (Figure 1, Col. 4 lines 1 – 64). Nagamine further teaches the other end of which is supported by said rotating plate, so that it can supply an elasticity power to said rotating plate to maintain the initial condition when said rotating plate is not rotating, while it can supply an elasticity power to said rotating plate to continue to rotate when said rotating plate is rotating (Section 0021 lines 4 – 11).

Regarding Claims 46, 49, Lee in view of Nagamine teaches all of the claimed limitations recited in Claims 44, 48. Lee further teaches the winding part of said first elastic part is wound a plurality of times, so that its radius can become widened around a concentric circle (Figure 1, Col. 4 lines 1 – 64, torsion springs have winding parts).

Regarding Claim 48, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 47. Lee further teaches said second elastic part is composed of a torsion spring, one end of which is supported by said slide plate and the

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other end of which is supported by the slide plate (Figure 1, Col. 4 lines 1 – 64).

Nagamine further teaches a rotating plate (Section 0021 lines 4 – 11).

Regarding Claim 50, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 40. Nagamine further teaches said rotating plate rotates around the center axis which passes through the penetrating hole formed at the center of said rotating plate (Section 0021 lines 4 – 11). Lee further teaches slide plate (Figure 1, Col. 4 lines 1 – 64).

Regarding Claim 51, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 50. Lee further teaches in said slide plate, a table part is formed to support the bottom (Figure 1, Col. 4 lines 1 – 64). Nagamine further teaches a rotating plate (Section 0021 lines 4 – 11).

Regarding Claim 52, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 40. Nagamine further teaches a rotation limiting means for limiting the rotation angle of said rotating plate (Section 0021 lines 4 – 11).

Regarding Claim 53, Lee in view of Nagamine teaches all of the claimed limitations recited in Claim 52. Nagamine further teaches a rotation limiting boss which is formed at one side of said rotating plate, and which is inserted into a trajectory groove formed at the other side thereof, wherein said rotation limiting boss contacts both ends of said trajectory groove and controls said rotating plate not to rotate any more when it is rotating or is not rotating (Figures 2A – 2D, Section 0021 lines 4 – 11).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAYMOND S. DEAN whose telephone number is (571)272-7877. The examiner can normally be reached on Monday-Friday 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond S Dean/
Primary Examiner, Art Unit 2618

Raymond S. Dean
August 11, 2008